



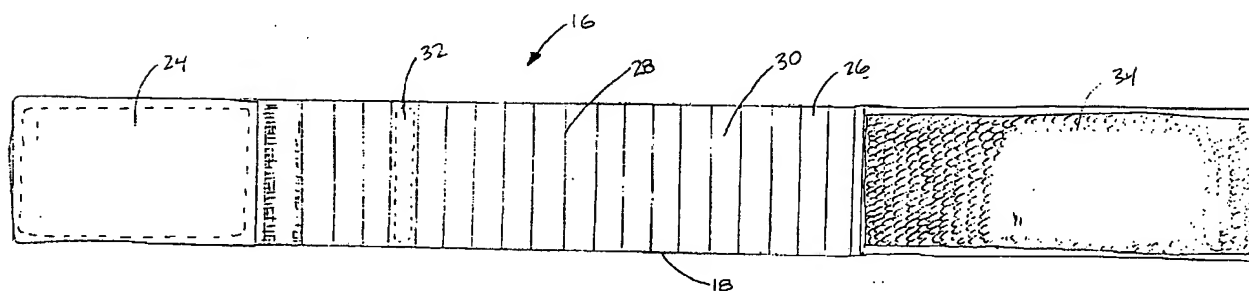
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(54) **ENSEMBLE ALOURDISSANT POUR ARTICLE DE SPORT**

(54) **SPORTS IMPLEMENT WEIGHTING APPARATUS**



(57) The present invention is an apparatus for weighting a sports implement, including a hockey stick and a golf club. The apparatus comprises a flexible body sheet for wrapping transversely around a portion of the implement; a friction pad attached to one end of the body sheet for providing friction contact between the apparatus and the implement; a plurality of transversely aligned pockets disposed along a longitudinal portion of the body sheet; a plurality of transverse fold lines defined by the spaces between the pockets, wherein the number of fold lines and the distance between successive fold lines are selected so that an undersurface of the body sheet can generally conform to the periphery of the selected portion of the implement; a plurality of weights housed within the pockets; and fastening means attached to portions of the body sheet for fastening the body sheet around the selected portion of the implement.

ABSTRACT

The present invention is an apparatus for weighting a sports implement, including a hockey stick and a golf club.

5 The apparatus comprises a flexible body sheet for wrapping transversely around a portion of the implement; a friction pad attached to one end of the body sheet for providing friction contact between the apparatus and the implement; a plurality of transversely aligned pockets disposed along a longitudinal  
10 portion of the body sheet; a plurality of transverse fold lines defined by the spaces between the pockets, wherein the number of fold lines and the distance between successive fold lines are selected so that an undersurface of the body sheet can generally conform to the periphery of the selected portion of  
15 the implement; a plurality of weights housed within the pockets; and fastening means attached to portions of the body sheet for fastening the body sheet around the selected portion of the implement.

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## Sports Implement Weighting Apparatus

### FIELD OF THE INVENTION

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This invention relates generally to weighting apparatus, and particularly to a weighting apparatus for sports implements.

### 10 BACKGROUND TO THE INVENTION

In sports requiring players to use hand-held sports implements, it is often beneficial to weight an implement during practice. Practicing with the weighted implement tends  
15 to strengthen muscles, increase co-ordination, and generally improve a player's overall skill. For example, hockey players have been known to weight their sticks during practice to strengthen their wrists when practicing wrist shots, and to improve their co-ordination when stickhandling and passing.  
20 Similar benefits can be achieved by golfers using weighted golf clubs when practicing their swing.

Weighting devices for various sports implements are known. For example, Canadian patent no. 1,212,133 (Rattenbury)  
25 issued 30 September 1986 discloses a sports implement weighting device for attachment to the shaft of sports implements such as hockey sticks and tennis racquets. A problem with the weighting device disclosed in Rattenbury is that it is directed towards use with limited types of sports implements, namely,  
30 implements having a generally rectangular cross-section. Also,

this weighting device tends to slide along the length of the shaft and self-locate on the portion of the shaft end that flares outwards, for example, near the blade end of a hockey stick. Although there are certain benefits to having a weighted sports implement with this weight distribution, a player may on occasion desire to alter the weight distribution so that he can strengthen different muscles and develop different skills. For example, a player practicing his wrist shot with a weighted stick having a weighting device near the blade end tends to strengthen his muscles around the wrist and forearm and develop a harder wrist shot. However, a player who desires to develop his strength and practice his puck handling skills would probably find that a weighted implement with this weight distribution improves his strength but tends to mask the sensation or "feel" of the puck on the blade and therefore reduces any benefit that would be normally gained from puck handling practice. For the player to simultaneously develop his strength and puck handling skills, the stick should be weighted but preferably not excessively near the blade end. To achieve this, the weighting device could be located further up the shaft or, a plurality of weighting devices could be attached to the shaft at selected locations to provide the desired weight distribution.

To achieve a particular weight distribution, hockey players have been known to add extra tape to selected locations on the stick blade. While this method tends to provide the desired weight distribution, it is difficult to remove the tape from the stick after practice has finished. Also, when removed, the tape tends to leave an undesirably sticky residue on the shaft surfaces. For these reasons, it is preferable to

have a readily removable weighting device that is attachable to selected locations along the shaft.

Gripping surfaces for removably attachable sports implement weighting devices that reduce the weighting device's tendency to slip have been previously disclosed. However, no such weighting device is known to be capable of secure attachment to different locations along a smooth surfaced implement shaft, so that the weighting device will not slip when the implement is vigorously used. In particular, no known weighting device is selectably and securely mountable on a portion of a golf club shaft having a smooth, circular cross-section. For example, U.S. patent no. 4,538,812 (Mugford) issued on 3 September 1985 discloses a weight device for attachment to a tennis racquet having a rubberized inner surface to reduce the tendency to slip. However, a rubberized surface does not have a particularly high slip resistance in comparison to other materials. Also, rubber tends to lose its gripping ability when exposed to moisture and tends to become brittle and break down with age.

As a result, there is a need for a sports implement weighting device that is securely and removably mountable on different portions of a smooth surfaced implement shaft so that the weight distribution of the weighted implement may be selectably varied. There is also need for such a sports implement weighting apparatus that is able to generally conform to the periphery of implements having different cross-sectional shapes.

SUMMARY OF THE INVENTION:

According to one aspect of the invention, there is  
5 a weighting apparatus that is securely but removably attachable  
to different locations along the shaft of various types of  
sports implements. The attached weighting apparatus provides  
additional mass to the sports implement so that a player  
practicing with the weighted implement will strengthen selected  
10 muscles and develop selected skills. The weighting apparatus  
has a flexible body sheet, a friction pad attached to an end  
of an undersurface of the body sheet, a weight pocket sheet  
attached to a portion of the surface of the body sheet so as  
to form an aligned series of pockets therewith, and a plurality  
15 of transverse rows of stitching disposed along the length of  
the body sheet to effect the foregoing attachment of the body  
sheet to the weight pocket sheet and thereby forming the  
aligned series of pockets. That is, each pocket is defined by  
the respective facing surfaces of the body and weight pocket  
20 sheets and two adjacent rows of stitching. A selected weight  
is housed within each of the plurality of pockets. A suitable  
fastener such as a hook-and-pile fastener is provided for  
fastening the weighting apparatus to itself after it is wrapped  
around a portion (preferably the shaft) of the implement.

25  
The friction pad is preferably made of a non-slip scrim of  
polyester coated with polyvinyl chloride (PVC) that has a slip  
resistance or a co-efficient of static friction  $> 1$  and has  
dimensions selected so that it can wrap at least once around  
30 the shaft of a selected implement. When wrapping the weighting  
device around the shaft, a selected amount of circumferential

tension is applied to the weighting apparatus so that sufficient compressive force is applied to the friction pad and shaft surfaces to prevent the weighting device from slipping along the shaft when the implement is subjected to vigorous use. To sustain the applied tension, a portion of the apparatus is elastic, preferably at least part of the body sheet. Also, the friction pad enables the weighting apparatus to be selectably mounted at different locations along the shaft so that the weight distribution of the weighted implement can be selectably varied.

According to another aspect of the invention, there is provided a tether attached to the friction pad end of the body sheet. The tether has a high co-efficient of friction and provides additional gripping force to prevent the weighting device from slipping along the shaft surfaces.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a schematic view of a first embodiment of a weighting apparatus attached to a hockey stick.

Figure 2 is a schematic plan view of the undersurface of the first embodiment of the weighting apparatus.

Figure 3 is a schematic side view of the first embodiment of the weighting apparatus.

Figure 4 is a schematic plan view of the undersurface of a second embodiment of the weighting apparatus.

Figure 5 is a schematic side view of the second embodiment of the weighting apparatus.

5     DETAILED DESCRIPTION OF THE INVENTION

Referring to Figure 1, there is shown in outline a hockey stick 10 having a blade 12 and a shaft 14. Securely wrapped around the blade end of the shaft 14 and fastened to itself is a weighting apparatus 16 in accordance with a first embodiment of the invention. The weighting apparatus 16 is used to add mass to the stick 10 so that a hockey player can strengthen selected muscles when practicing with the weighted stick. Also, it has been found that use of the weighted stick while practising stick-handling and shooting is particularly beneficial to improving the player's skills in those areas. Although the following will discuss the weighting apparatus 16 as used to weight a hockey stick, it is understood that the invention is not limited only to use with hockey sticks but may be advantageously used with other hand-held sports implements having an elongated shaft. For example, the weighting apparatus 16 may be used to weight golf clubs, baseball bats, and racquets.

Referring to Figures 2 and 3, the weighting apparatus 16 has a generally elongated rectangular body sheet 18 made from a heavy gauge flexible polypropylene webbing. This material is selected because it is relatively elastic, durable, and non-water absorbing compared to other flexible materials. While the entirety of the sheet need not be elastic, the sheet or an extension of the sheet wrapping around the shaft should have



sufficient elasticity that adequate circumferential tension can be applied. The sheet's reluctance to absorb water is desirable for avoiding weight changes due to water retention. Although not preferred, other materials may be substituted if they have some of these properties, e.g. leather or vinyl. The body sheet 18 has two opposing surfaces, hereinafter designated for convenient reference as the undersurface 20 and the outer surface 22.

Stitched to one end of the body sheet undersurface 20 is a friction pad 24 made from a flexible PVC coated polyester scrim for providing friction contact between the weighting apparatus 16 and the shaft 14. The PVC coating gives the friction pad 24 a slip resistance, otherwise known as a static co-efficient of friction, that is greater than or equal to 1. Gripping materials with this degree of slip resistance are commonly referred to as "non-slip". The friction pad 24 also desirably maintains its non-slip properties in both wet and dry conditions, and because its base material is made from polyester, is significantly more tear resistant than polypropylene or rubber based scrims. An example of a suitable such scrim is the "Slipnot" brand of PVC coated scrim typically used for area rug undersurfaces and supplied by Vantage Industries, Inc.

The length of the friction pad 24 is selected so that the friction pad 24 can completely wrap around the shaft cross-section of a typical hockey stick or golf club. When the weighting apparatus 16 is securely wrapped around the shaft 14 and fastened to itself with enough tension to cause a sufficient compressive force on the friction pad 24 and shaft

14 surfaces, the weighting apparatus 16 is prevented from sliding along the shaft 14. This enables the weighting apparatus 16 to be securely attached to any location along the shaft 14 that suits the preference of the player. It has been found that under sufficient tension, the weighting apparatus 16 can be securely fastened to a majority of surfaces, including the smooth aluminum surfaces of a hockey stick. By selecting the location of the weighting apparatus 16 on the shaft, the player can vary the weight distribution along the sports implement to selectively strengthen certain muscles or develop certain skills. Alternatively, the player can attach multiple weighting apparatus 16 at different selected locations on the shaft 14 to achieve a desired weight distribution.

Attached to the portion of the body sheet undersurface 20 that is adjacent to the friction pad 24 is a weight pocket sheet 26 made from the same polypropylene webbing as the body sheet 18. There are a plurality of transverse rows of stitching 28 disposed at regular intervals along the length of the weight pocket sheet 26 for effecting the foregoing attachment of the two sheets 18, 26. An aligned series of pockets 30 are defined between the two sheets 18, 26 and each set of two adjacent rows of stitching 28. Each pocket 30 houses a suitably dimensioned weight 32. Preferably, the weight 32 is cylindrical and made from lead, but can be any suitable shape that fits within the pocket 30, and can be made from any suitably dense material. For example, the weight 32 may alternatively be comprised of dense material in granular form.

After the weight 32 is inserted into the weight pocket 30, the ends of the weight pocket 30 are stitched closed. Alternatively, one or both ends of the weight pocket 30 may be sealed with a hook-and-pile fastener so that weights of different shapes and mass may be removably housed within the weight pockets.

The rows of stitching 28 also serve as fold lines, so that the weighting apparatus 16 may be folded about a plurality of positions and thus be wrapped around a selected implement shaft. The number of fold lines and their relative proximity to each other are selected so that the weighting apparatus 16 can generally conform to the cross sectional shape of a hockey stick or a golf club shaft, i.e. conform to a generally rectangular or circular cross-section. This ensures that the circumferential tension which is imparted on the weighting apparatus 16 when wrapped around the shaft 14 is sufficiently translated into a balanced distribution of compressive forces onto the friction pad 24 so that sufficient friction force exists to prevent the weighting apparatus 16 from sliding along a smooth shaft. It has been found that six fold lines spaced so that seven weights wrap once around a hockey stick shaft offers satisfactory conformity around both hockey stick and golf club shafts. It has been found that increasing the number of fold lines and decreasing the distance between adjacent fold lines increases the ability of the weighting device to conform to the shape of the selected implement. As increasing the number of fold lines and weights tends to increase the manufacturing costs of the weighting device, the optimal number of fold lines and weights will therefore be a suitable

compromise between these competing objectives and may differ depending on the importance of each objective relative to the other. For example, a higher priced version of the weighting apparatus having many fold lines and weights and offering better conformity and grip to implement shafts may be offered as a higher end product for more serious players.

Attached to the undersurface 20 of the body sheet 18 adjacent to the weight pocket sheet 26 is a pile portion of a hook-and-pile fastener 34. Attached to a portion of the body sheet outer surface 22 is a hook portion of the fastener 34. To fasten the weighting apparatus 16 to the hockey stick shaft 14, the friction pad 24 is wrapped around the cross-section of the shaft 14. Then, the body sheet 18 is wrapped around the shaft 14 with appropriate tension, until the hook fastener portion 34 makes contact with the pile fastener portion 34 and a connection is established.

The length and positions of the hook and pile portions of the fastener 34 are selected so that there is enough engagement between the fastener portions 34 to maintain a bond to keep the weighting apparatus 16 securely wrapped around the implement shaft 14 even when the weighted implement is vigorously shaken.

Referring to Figures 4 and 5, a weighting apparatus 16 according to a second embodiment of the invention is shown. In this embodiment, there is a slim elongated tether 36 attached to the friction pad end of the weighting apparatus 16. The tether 36 is made from PVC or another suitable material having a high slip resistance, and provides additional friction force to that already provided by the friction pad 24. Also,

the tether 36 tends to be easier to wrap around the shaft 14 than the weight-laden body sheet 18, and when first wrapped around the shaft 14, makes it easier for the rest of the weighting device 16 to be subsequently wrapped.

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Other alternatives and variants of the above described methods and apparatus suitable for practicing the methods will occur to those skilled in the technology. For example, it is understood that the dimensions of the weighting apparatus 16 are not limited to those illustrated in the disclosed embodiments. The weighting apparatus 16 must be long enough so that it can wrap around a hockey stick shaft at least once and so that the portions of the fastener have enough surface area contact to establish a satisfactory bond, but can be of course increased beyond this length to increase the mass of the weighting apparatus 16. Similarly, the width of the weighting apparatus 16 may be varied to vary its mass, and may even be increased beyond its length. This is not preferred, as a player can attach multiple weighting apparatus 16 to different locations on the shaft and thus have greater control of the weight distribution along the shaft 14. Also, instead of attaching a portion of the fastener 34 to the end of the body sheet undersurface 20, an end the fastener 34 may be attached to an end of the body sheet 18 in an edge-to-edge connection [not shown]. In this connection, the fastener 34 may be made from an elastic material to sustain an applied circumferential tension to the apparatus when wrapped around an implement.

The scope of the invention is as defined in the following claims.

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## WHAT IS CLAIMED IS:

1. An apparatus for weighting an implement, the apparatus comprising:

- 5 (a) a flexible body sheet for wrapping transversely around a selected portion of the implement;
- (b) a friction pad attached to one end of the body sheet for providing friction contact between the apparatus and at least one surface of the selected portion of
- 10 the implement;
- (c) a plurality of spaced transversely aligned pockets disposed along a longitudinal portion of the body sheet;
- (d) a plurality of transverse fold lines on the body
- 15 sheet defined by the spaces between the plurality of pockets, wherein the number of fold lines and the distance between successive said fold lines are selected so that an undersurface of the body sheet can generally conform to the periphery of the
- 20 selected portion of the implement;
- (e) a plurality of weights distributively housed within the plurality of pockets;
- (f) fastening means formed in or attached to portions of
- 25 the body sheet for fastening the body sheet around the selected portion of the implement.

2. The apparatus of claim 1, wherein the implement has a shaft, and the selected portion of the implement is its shaft.

3. The apparatus as claimed in claim 2 wherein the friction

pad is made from a PVC-coated polyester scrim having a static co-efficient of friction of at least 1.0.

4. The apparatus as claimed in claim 3 wherein the body sheet  
5 is elastic so that a selected circumferential tension can be applied to the apparatus when wrapped around the implement for secure attachment of the apparatus to the implement.

10 5. The apparatus as claimed in claim 3 wherein the fastener is elastic so that a selected circumferential tension can be applied to the apparatus when wrapped around the implement for secure attachment of the apparatus to the implement.

15 6. The apparatus as claimed in claims 4 or 5 wherein the fastening means is a hook-and-pile fastener comprising a hook portion and a fastener portion.

20 7. The apparatus as claimed in claim 6, further comprising a tether attached to the friction pad end of the body sheet, for providing additional friction contact between the apparatus and the implement shaft surfaces.

25 8. The apparatus as claimed in claim 7 wherein the tether is coated with PVC and has a static coefficient of friction of at least 1.0.

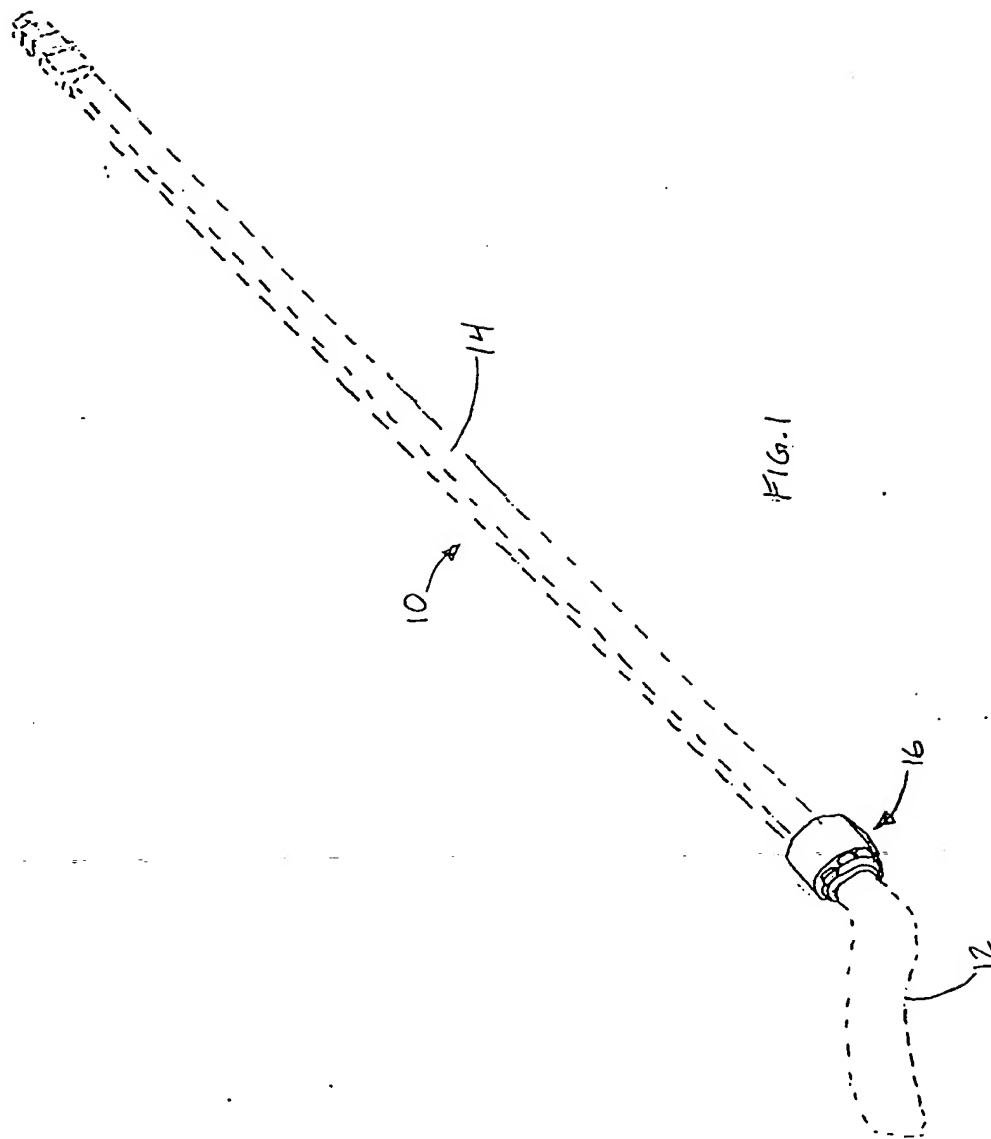
30 9. An apparatus for weighting an implement, the apparatus comprising:

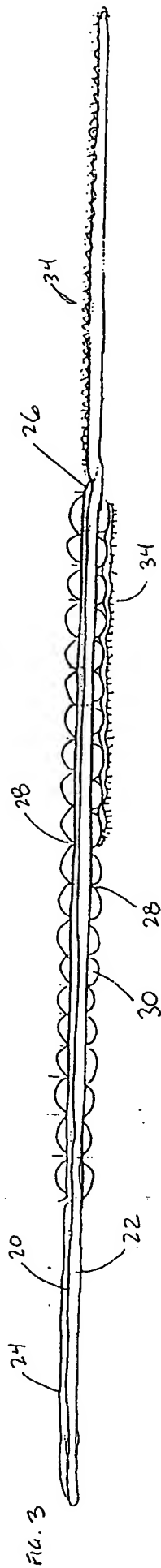
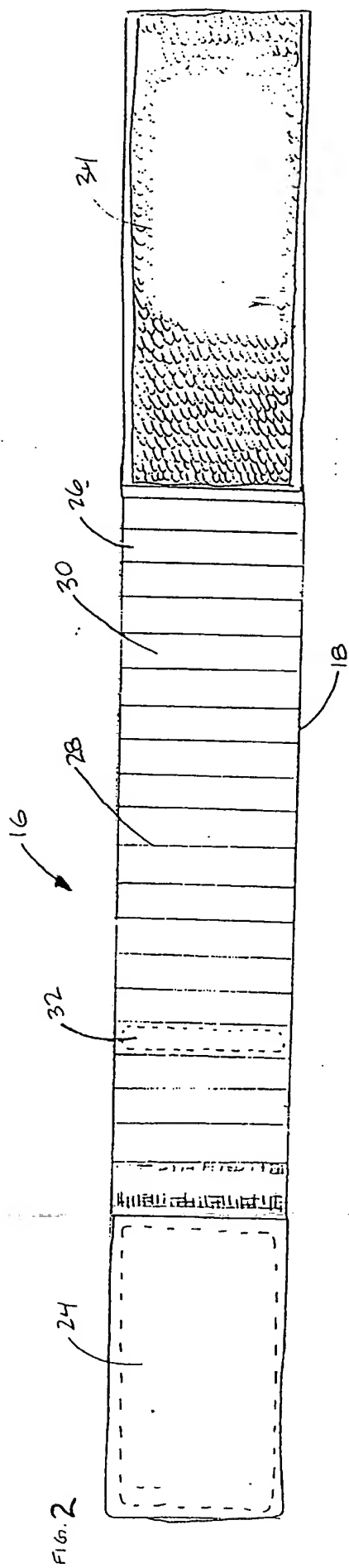
- (a) a flexible body sheet for wrapping transversely around a selected portion of the implement;
- (b) a friction pad attached to one end of the body sheet for providing friction contact between the apparatus and at least one surface of the selected portion of the implement;
- (c) a plurality of spaced transversely aligned pockets disposed along a longitudinal portion of the body sheet, each said pocket being of a selected shape and size for housing a weight of selected dimensions;
- (d) a plurality of transverse fold lines on the body sheet defined by the spaces between the plurality of pockets, wherein the number of fold lines and the distance between successive said fold lines are selected so that the undersurface of the body sheet can generally conform to the periphery of the selected portion of the implement;
- (e) fastening means formed in or attached to portions of the body sheet for fastening the body sheet around the selected portion of the implement.

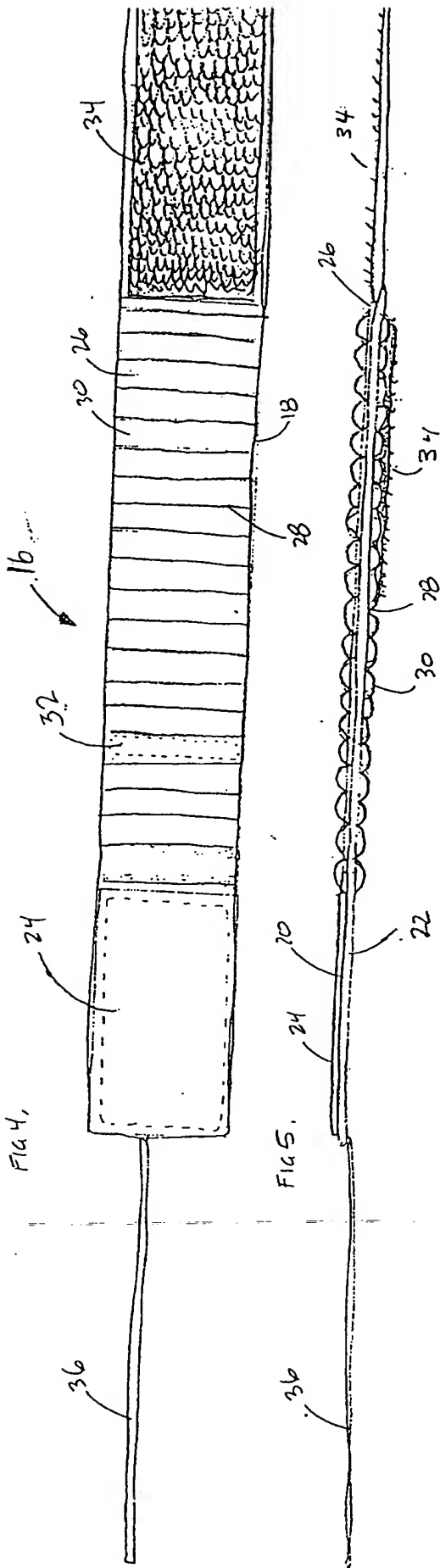
10. The apparatus as claimed in claim 9 further comprising a plurality of weights distributively housed within the plurality of pockets.

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